TIKHOMIROV, B. A., GALAZIY, G. I.

Sieversia Glacialis, Botany - Arctic Regions

Determining the age of Sieversia glacialis R. Br. and some problems of life span of plants. Bot. zhur. 37, No. 3, 1952. Botanicheskiy Institut im V. L. Komarova, Akademii Nauk SSSR i Vostochno-Sibirskiy Filial, Akademii Nauk SSSR. Recd. April 2, 1952.

(Biol. A 28 no.3: 6877 '54)

SO: Monthly List of Russian Accessions, Library of Congress, September 1953, Uncl.

TIKHOMIROV, B.A.

The role of moss cover in the life of plants of the extreme North. Bot. Zhur. 37, No.5, 629-638 '52. (MLRA 5:10)
(Biol.A 28 no.2:2813 '54)

TIKHOMIROV, B.A.

Treelessness of the tundra and measures for overcoming it. Bot.zhur. 38 no.4:513-529 Jl-Ag '53. (MLRA 6:9)

1. Botanicheskiy institut im. V.L.Komarova Akademii Nauk SSSR, Leningrad. (Arctic regions--Forests and forestry) (Forests and forestry--Arctic regions) (Tundras)

TIKHOMIROV, B. A.

5742. Otkorm sviney v sovkhoze «Terek» (Mozdokskiy rayon). Ordzhonikidze, sev.-oset. kn. izd., 1954. 59s. s ill. 20sm. 1.100 ekz 65k.-Bibliogr: s 56-57 (19 nazv.)- (55-989) p 636.4.084st (47.915) /(o16.3)

SO: Knizhnaya, Letopis, Vol. 1, 1955

Tikhomirov, B.A.

BARANOV, P.A., redaktor; GENKEL', P.A., redaktor; KUPREVICH, V.F., redaktor; LAVRENKO, E.M., redaktor; SOCHAVA, V.B., redaktor; SUKACHEV, V.N., redaktor; TIKHOMIROV, B.A., redaktor; SHISHKIN, B.K., redaktor; ZALENSKIY, O.V., redaktor.

[Problems in botany] Voprosy botaniki. Moskva, Izd-vo Akademii nauk SSSR. Vol. 1-2. 1954. 904 p. [In Russian and French] (MLRA 7:11)

1. Vsesoyuznoye botanicheskoye obshchestvo.
(Botany)

TIKHOMIROV, B.A.

In memory of B.N.Gorodkov. Bot.zhur. 39 no.1:139-149 Ja-F '54.
(MLRA 7:3)

1. Botanicheskiy institut im. V.L.Komarova Akademii nauk SSSR, Leningrad. (Gorodkov, Boris Nikolaevich, 1890-1953)

TIKHOMIROV, B. A.

USSR/Paleontology

Card 1/1

Authors : Tikhomirov, B. A. and Kuprianova, L. A.

Title : Analysis of pollen and vegetable remains of food in the stomach of the Berezovskiy mammoth

Periodical : Dokl. AN SSSR, 95, 6, 1313 - 1316, 21 Apr 54

Abstract : The article describes the contents of the Berezovskiy mammoth's stomach, and analyses, performed by scientists, of pollen and vegetable remains found therein. As a result of these analyses, a table of the stomach content is given. Photographs.

Institution : V. L. Komarov Botanical Inst. of the Acad. of Scs. of the USSR

Submitted : 27 Feb 54

TIKHOMIROV, B. A.

USSR/Biology - Plant Ecology

Card : 1/1

Authors : Tikhomirov, B. A., and Strelkova, O. S.

Title : Mycorrhiza of arctic plants

Periodical : Dokl. AN SSSR, 97, Ed. 2, 337 - 339, July 1954

Abstract : The authors investigated 92 representatives of 21 arctic plant families and found mycorrhiza only in 27 cases. Latin names of arctic plants in which no mycorrhiza was found are given. Ten references. Table.

Institution : Acad. of Sc. USSR, The V. L. Komarov Botanics Institute and the State Pedagogical Institute in Leningrad

Presented by : Academician V. N. Sukachev, May 11, 1954

ZHUKOVSKIY, P.M., redaktor; SOCHAVA, V.B., redaktor; SHUKACHEV, V.N., redaktor; TIKHOMIROV, B.A., redaktor; SHISHKIN, B.K., redaktor; LITKEVICH, S.V., tedaktor izdatel'stva; YAKOVLEVA, B.M., redaktor izdatel'stva; PEVZNER, P.S., tekhnicheskiy redaktor

[Problems in botany] Problemy botaniki. Pod obshchei red. P.M. Zhukovskogo, i dr. Moskva, Izd-vo Akademii nauk SSSR. Vol.2. 1955. 374 p. (MLRA 9:8)

1. Vsesoyuznoye botanicheskoye obshchestvo. 2. President Vsesoyuznogo botanicheskogo obshchestva (for Sukachev) (Botany)

TIKHOMIROV, B.A.

Present state of vegetation in the Far North of the U.S.S.R. and current research problems. Bot.zhur.40 no.4:508-527 Jl-Ag'55. (MLRA 8:11)

1. Botanicheskiy institut imeni V.L.Komarova Akademii nauk SSSR, Leningrad
(Russia, Northern--Botany)

TIKHOMIROV, B.A.

Effect of animals on the vegetation of Taymyr tundra. Biul. MOIP. Otd biul. '60 no.5:147 -151 S-O '55. (MIRA 9:4)

(TAYMYR PENINSULA--ECOLOGY)

TIKHOMIROV, B.A.

Influence of the Ob lemming (Lemmus obensis Brants) on the vegetative cover of the tundra. Dokl.AN SSSR 104 no.4:650-652 O '55.
(MLRA 9:2)
1.Botanicheskiy institut imeni V.L.Komarova Akademii nauk SSSR.
Predstavlena akademikom V.N.Sukachevym.
(Taimyr Peninsula--Tundras)

TIKHOMIROV, B.A., redaktor

[The vegetation of the Far North and its utilization] Rastitel'nost' Krainego Severa SSSR i ee osvoenie. Moskva, Akad. nauk SSSR, 1956.
(MLRA 10:4)

(Russia, Northern--Botany)

14-57-7-14923

Translation from: Referativnyy zhurnal, Geografiya, 1957, Nr 7, p 119 (USSR)

AUTHOR: Tikhomirov, B. A.

TITLE: Snow Cover in the Tundra and Its Effect on Vegetation (Nekotoryye osobennosti snezhnogo pokrova tundry i yego vliyaniye na sushchestvovaniye rastitel'nosti)

PERIODICAL: V sb: Sneg i talyye vody. Ikh izucheniye i ispol'zovaniye. Moscow, AN SSSR, 1956, pp 206-239

ABSTRACT: The snow cover is extremely important to vegetation in the tundra, while this vegetation, in turn, influences the distribution and dynamics of the snow cover. The vegetation, buried under the snow, definitely affects the composition and properties of the lower snow layers. In forest tundra snow is looser and is more evenly distributed; in spring it melts quite quickly near the trees. A study of the laws

Snow Cover in the Tundra (Cont.)

governing the distribution of the tundra snow cover will facilitate control of the speed at which the snow melts and the rate at which it accumulates. This will create better conditions for plant growth control. Such work will call for special studies of the significance of mosses, grasses, and subnivalian life in the formation and distribution of the snow cover.

Card 2/2 O. Ye.

TIKHOMIROV, B.A.

On the preservation of forests at their northern limit and on the problems of tundra reforestation. Rast.Krain. Sev.SSSR i ee osv. no.1:5-15 '56. (MLRA 10:2)

1. Botanicheskiy institut im. V.L. Komarova AN SSSR.
(Tundras)
(Russia, Northern--Afforestation)

TIKHOMIROV, B.A., doktor biologicheskikh nauk.

Guests of Danish botanists. Vest.AN SSSR 26 no.4:69-72 Ap '56.
(Denmark--Botany) (MIRA 9:7)

TIKHOMIROV, B.A.

Journey to Denmark. Bot.zhur.41 no.7:1080-1090 Jl '56. (MLRA 9:10)

1.Botanicheskiy institut imeni V.L.Komarova Akademii nauk SSSR, Leningrad.
(Denmark--Botany--Research) (Arctic regions--Botany)

TIKHOMIROV, B.A.; SHTEPA, V.S.

Characteristics of the forest outposts in the Lower Lena Valley. Bot.zhur.41 no.8:1107-1122 Ag '56. (MLRA 9:12)

1. Botanicheskiy institut imeni V.L.Komarova Akademii nauk SSSR, Leningrad.
(Lena Valley--Forests and forestry)

TIKHOMIROV, B.A., professor.

Forest and tundra. Priroda 45 no.7:31-38 Jl '56. (MLRA 9:9)
(Tundras)

Tikhomirov, B.A.

TIKHOMIROV, B.A.

Second Conference of Delegates of the All-Union Botanical Society.
Izv. AN SSSR. Ser.biol. no.6:763-772 N-D '57. (MIRA 10:12)
(LENINGRAD--BOTANY--CONGRESSES)

TIKHOMIROV, B.A.; NORIN, B.N.

Conservation and efficient utilization of forests at their northern limits. Okhr. prir. i zapov. delo v SSSR no.2:95-107 '57.
(MLRA 10:3)

1. Botanicheskiy institut imeni V.L. Komarova Akademii nauk SSSR.
(Russia, Northern--Forests and forestry) (Tundras)

TIKHOMIROV, B.A.; DOROGOSTAYSKAYA, Ye.V.

Penetration of new plants into the flora of artic regions in connection with the development of agriculture. Izv. AN SSSR. Ser.biol. no.5:601-610 S-O '57. (MIRA 10:10)

1. Botanicheskiy institut im. V.L.Komarova AN SSSR, Otdel geobotaniki.
(RUSSIA, NORTHERN--PLANT INTRODUCTION)

TIKHOMIROV, B.A.

26-12-6/49

AUTHOR: Tikhomirov, B.A., Professor

TITLE: Preservation of Forests in the Extreme North (Ob okhrane lesov kraynego severa)

PERIODICAL: Priroda, 1957, No 12, pp 35-37 (USSR)

ABSTRACT: The author points out the importance of forests in the extreme north as regulators of various natural processes, e.g. strong winds, air temperatures etc. But the growth of such outpost forests is very slow, and reforestation extremely difficult owing to the rough climate, sterility of the soil and damage caused by animals and birds. The author mentions 2 forests in Siberia, the wooded island of Ary-Mas in the Khatang district and the Tit-Ary, a similar island in the Lena river area. The Ary-Mas forest had been considerably reduced by cutting trees at random, while the other forest had completely disappeared by uncontrolled felling. The situation was not better along the Novaya and Lena rivers where existing woods had also been heavily decreased. These facts induce the author to suggest that forests growing in such unfavorable conditions should be preserved from destruction for industrial purposes and placed under the control of the appropriate Academies of Sciences. There are 2 photos and 3 references, all of which are Slavic

Card 1/2

Preservation of Forests in the Extreme North 26-12-6/49

(Russian)

ASSOCIATION: Botanical Institute imeni V.L. Komarov of the AN, USSR (Leningrad) (Botanicheskiy institut imeni V.L. Komarova Akademii nauk SSSR (Leningrad)

AVAILABLE: Library of Congress

Card 2/2

TIKHOMIROV, B.A.

An interesting lecture delivered by Academician V.L.Komarov at the Botanical Institute of the Academy of Sciences of the U.S.S.R. Bot.zhur. 42 no.6:952-953 Je '57. (MIRA 10:7)

1. Botanicheskiy institut imeni V.L. Komarova Akademii nauk SSSR, Leningrad.
(Komarov, Vladimir Leont'evich, 1869-1945)

TIKHOMIROV, B.A.

Characteristics of the hot spring flora and vegetation on the Chukchi Peninsula. Bot.zhur. 42 no.9:1427-1445 S '57. (MLRA 10:9)

1. Botanicheskiy institut im. V.L.Komarova Akademii nauk SSSR, Leningrad.
(Chukchi Peninsula--Plants, Effect of temperature on) (Springs)

TIKHOMIROV, B.A.

Dynamic phenomena in the vegetation of the spotted tundras of the Arctic. Bot.zhur. 42 no.11:1691-1717 N '57. (MIRA 10:10)

1.Botanicheskiy institut im. V.L. Komarova AN SSSR, Leningrad.
(Tundras)

TIKHOMIROV, B.A.

ZHUKOVSKIY, P.M., red.; SOCHAVY, V.B., red.; SUKACHEV, V.N., red.; TIKHOMIROV, B.A., red.; SHISHKIN, B.K., red.; ALEKSANDROV, V.G., red.; IL'IN, M.M., otvetstvennyy red; YAKOVLEVA, V.M., red. izd-va; ZENDEL', R.Ye., tekhn.red.

[Problems of botany] Problemy botaniki. Pod obshchei red. R.M. Zhukovskogo i dr. Moskva, Izd-vo Akad. nauk SSSR. Vol.3. 1958. 316 p. (MIRA 11:5)

1. Vsesoyuznoye botanicheskoye obshchestvo. 2. Prezident Vsesoyuznogo botanicheskogo obshchestva (for Sukachev)
(Botany)

TIKHOMIROV, B.A.

3(5) PHASE I BOOK EXPLOITATION SOV/1781

Akademiya nauk SSSR. Institut geografii.

Voprosy fizicheskoy geografii (Problems in Physical Geography) Moscow, Izd-vo AN SSSR, 1958. 370 p. Errata slip inserted. 1,500 copies printed.

Resp. Ed.: G.D. Rikhter, Doctor of Geographical Sciences, Professor; Ed. of Publishing House: D.N. Tugarinov; Tech. Ed.: N.D. Novichkova.

PURPOSE: This book is intended for meteorologists, hydrologists, pedologists, geologists, and students of physical geography in general.

COVERAGE: These articles are dedicated to Academician A.A. Grigor'yev in commemoration of his seventy-fifth birthday anniversary. They treat problems in physical geography pertaining to the northern regions of the USSR and particularly those of Yakutia. The majority of the articles are devoted to questions of latitudinal and vertical zonation and contain much factual material on the relationship between the various geographic components. Practical conclusions and meteorological principles are cited. Each article is accompanied by maps, photographs and numerous bibliographic references.

Problems in Physical Geography SOV/1781

AVAILABLE: Library of Congress

Card 4/4

TIKHOMIROV, B.A.

Natural conditions and vegetation of the mammoth era in northern Siberia. Probl.Sev. no.1:156-172 '58. (MIRA 11:12)

1. Botanicheskiy institut im. V.L.Komarova AN SSSR, Otdel geobotaniki.
(Siberia--Mammoth)

SUKACHEV, V.N., akad., glavnyy red.; VASIL'YEV, V.N., prof. doktor biol. nauk, otv. red.; IL'IN, M.M., prof., doktor biol. nauk, otv. red.; KRISHTOFOVICH, A.N., red. [deceased]; TIKHOMIROV, B.A., red.; TOLMACHEV, A.I., red.; FEDOROV, An. A., red.; SEMENOVA-TYAN'SHAN'SKAYA, A.M., red. izd-va.; PEVZNER, R.S., tekhn. red.

[Materials on the history of the flora and vegetation of the U.S.S.R.] Materialy po istorii flory i rastitel'nosti SSSR. Moskva. No. 3. 1958. 479 p. (MIRA 11:11)

1. Akademiya nauk SSSR. Botanicheskiy institut.
(Botany)

AUTHOR: Tikhomirov, B. A., Professor SOV/30-58-7-7/49

TITLE: Some Problems of Investigating the **Vegetation** of the Soviet Arctic Regions (Nekotoryye zadachi izucheniya rastitel'nogo pokrova sovetskoy arktiki)

PERIODICAL: Vestnik Akademii nauk SSSR, 1958, Nr 7, pp. 45 - 48 (USSR)

ABSTRACT: More than one third of the territory of the USSR is situated beyond the Northern Polar Circle, approximately 15% of the area of the country (more than 3 million km^2) being occupied by the Tundra Zone which extends to the North from the boundary of the Taiga woods along the coast of the Arctic Ocean. This region forms a homogeneous natural complex which has vast natural resources, the investigation and exploitation of which are of considerable interest above all in connection with the steadily increasing navigation on the northern sea route. Eternally frozen ground is prevailing there and the **population practices** reindeer-breeding from times immemorial in connection with fishing and shooting. Agriculture, cattle-breeding and the breeding of animals developed there in the years of Soviet Rule. The investigation of the flora and vegetation of the Soviet Arctic Region

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is therefore of greatest practical importance. Due to the characteristic feature of the nature of that region and on account of the specific action of physico-geographical processes on organic life, the investigation of the respective vegetal cover is also of great theoretical interest. Up to now, there are still regions which remained unexplored - mainly in Siberia (Sibir') - (the Territory of the Lena Delta up to the Gulf of Chaunsk, the Eastern Coast of Taymyr, the Plateau of Central Siberia (srednyaya Sibir'), the mountain crests of Cherskiy, Verkhoyanskiy, Anadyrskiy, Koryakskiy, Gydan etc.). The investigations carried out up to now made it possible to enter the prevailing plant groupings into the geobotanical map of the USSR which has been published by the Institute of Botany of the AS USSR on the scale of 1 : 4000000. Many other problems have been solved as well. Further measures for increasing the productivity of northern vegetation and its efficient exploitation require, however, widening of the scope of the scientific investigations. The stock-taking of the Arctic Flora is considered to be the most urgent problem. It is mentioned that up till now only the Yakutsk, Kola, Komi- and Ural Branch, AS, USSR dealt with this problem. In the

West Siberian (Zapadnaya Sibir'), East Siberian (Vostochnaya Sibir'), Far Eastern (Dal'niy Vostok) Branches these problems were not tackled. With respect to quality, the flora of the Arctic Regions is relatively poor; their systematic investigations must therefore be intensified by biological, biochemical and palinological analyses. It is time to publish a monograph "Food Characteristics of the Plants of the Extreme North". The characteristic features of the life-activity of the Arctic plants must be investigated. The papers published by V.P.Dadykin unfortunately deal only with the field of open forests. The biological characteristics of ligneous types in the north also should be investigated. The solution of the problem of re-forestation must also be considered as topical subject. These works require many years of investigations. The Salekhar-Station of the Ural Branch, AS USSR, is situated in the Arctic Region of Siberia; it would be necessary, however, to establish such stations also in the Northeastern Siberia and in Yakutiya. They could be established at the extreme northern limit of forest growth, in the section

of Ary-Mas (Novaya, tributary of the Khatanga) and on the timbered island in the Lena-Delta (Tit-Ary). The Polar Stations of the Glavsevmorput', as well as the Subarctic Stations and supply points of the Institute of Agriculture of the extreme North of the Ministry of Agriculture RSFSR (institut sel'skogo khozyaystva Kraynego Severa Ministerstva sel'skogo khozyaystva RSFSR) are not able to solve these problems. Tsentral'nyy Taymyr, where the Meteorological Station of the Glavsevmorput' exists since 1943, would be the most suitable point for a Polar Biological Station. An adequate organization of research is required for carrying out successful work. The Arctic Institute (Arkticheskiy institut), the Institute of Agriculture of the Extreme North and partially also a number of other Institutes the work of which requires, however, a clear coordination, deal with this problem for the time being.

FREYBERG, Ye.; TIKHOMIROV, B.A., prof.; GARNOVSKIY, Kr.

Notes of a naturalist. IUn.nat. no.12:37-38 D '58. (MIRA 11:12)
(Natural history)

AUTHOR: Tikhomirov, B. A., Doctor of Biological Sciences 30-58-5-32/36

TITLE: Investigation of the Soviet Herbarium Materials by a Canadian Botanist (Izucheniye kanadskim botanikom sovetskikh gerbarnykh materialov).
In the Botanical Institute imeni V. L. Komarov
(V botanicheskom institute imeni V. L. Komarova)

PERIODICAL: Vestnik Akademii Nauk SSSR, 1958, Vol. 2 , Nr 5, pp. 131-131 (USSR)

ABSTRACT: From February 19 to March 11 the well-known Canadian Professor A. E. Porsild worked at the Botanical Institute imeni V. L. Komarov in Leningrad. He is an eminent botanist and great expert in the field of arctic flora, Member of the Canadian Academy of Sciences and Curator of the National Herbarium of the National Museum in Ottawa. His scientific activity is described in detail. He also held lectures in the All-Union Botanical Society as well as in the Geographical Society of the USSR. It became evident on that occasion that many analogies exist

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Investigation of the Soviet Herbarium Materials by a Canadian Botanist. In the Botanical Institute imeni V. L. Komarov 30-58-5-32/36

between the Soviet and Canadian regions.

1. Plants--Arctic regions 2. Scientific personnel--Canada

Card 2/2

TIKHOMIROV, B.A.

Data on useful plants of the eskimos from the southeastern coast of the Chukchi Peninsula. Bot. zhur. 43 no.2:242-246 F '58.
(MIRA 11:5)

1. Botanicheskiy institut im. V.L. Komarova Akademii nauk SSSR, Leningrad.

(Chukchi Peninsula--Botany, Economic)

AUTHOR: Tikhomirov, B.A. 12-90-2-9/30

TITLE: On the Non-existant Benkendorf Expedition to the Indigirka River (O nesushchestvovavshey ekspeditsii Benkendorfa na R. **Indigirku)**

PERIODICAL: Izvestiya Vsesoyuznogo Geograficheskogo Obshchestva, 1958, Vol 90, Nr 2, pp 163 - 166 (USSR)

ABSTRACT: The theory that mammoth's food consisted of coniferous plants, is proved to be wrong. This hypothesis was based on information presented in a book by Philipp Koerber "Kosmos fuer die Jugend", published in 1895, telling about an expedition to Siberia by Benkendorf, who pretented having discovered a well-conserved mammoth. With reference to various sources in scientific literature, the author proves that this expedition never took place and that the information presented by Koerber is fiction. There are 14 references, of which 11 are Russian, 2 German and 1 English.

AVAILABLE: Library of Congress
Card 1/1 **1. Animals-Dietary factors**

TIKHOMIROV, B. A.

"The Problem of the Americano-Asiatic Floristic Connections and the Origin of the Soviet-arctic Flora."
Paper submitted for the Int'l Botanical Congress, Montreal, Canada, 19-29 Aug 1959.

Botanical Institute, Academy of Sciences U.SS.R., Leningrad.

TIKHOMIROV, B.

"The Main Results of Botanical-Geographical Investigation of the Tundra Vegetation in the U.S.S.R."
Paper submitted for the Int'l Botanical Congress, Montreal, Canada, 19-29 Aug. 1959.

Academy of Sciences U.S.S.R., Leningrad.

TIKHOMIROV, V. A.

"Thermophyte Flora of Chukotka; Its Peculiarities and Origin.
Paper submitted for the Int'l Botanical Congress, Montreal, Canada, 19-29 Aug 1959.

Botanical Institute, Academy of Sciences, U.S.S.R., Leningrad.

TIKHOMIROV, B.A.

Some results and problems in studying the vegetation of northern Siberia. Izv.Sib.otd.AN SSSR no.2:101-108 '59. (MIRA 12:7)

1. Botanicheskiy institut im. V.L.Komarova AN SSSR.
(Siberia, Northern--Botanical research)

TIKHOMIROV, B.A.

Distribution of ferns in the Soviet Arctic. Bot.mat.Gerb. 19:595-621 '59. (MIRA 12:8)
(Russia, Northern--Ferns)

30(1) SOV/26-59-3-19/47

AUTHOR: Tikhomirov, B.A., Professor (Leningrad)

TITLE: Botanical Research on the Chukotskiy Peninsula

PERIODICAL: Priroda, 1959, Nr 3, pp 97 - 100 (USSR)

ABSTRACT: Almost the sole source of information on the vegetation of the Chukotskiy Peninsula so far is the botanical-geographical essay of B.N. Gorodkov [Ref 1] who worked mainly on the northern coast of the peninsula. The western coast of the Bering Straits was therefore not described by him. Several problems relating to the vegetational resources of the Chukotskiy Peninsula also have not been solved as yet. When compiling the "Arctic Flora of the USSR" the insufficiency of the material on the flora of the eastern coast of Chukotskiy became evident. In connection with the discovery of hot springs, the study of the flora and vegetation in these districts seemed of great interest. Special interest is

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Botanical Research on the Chukotskiy Peninsula

attached to examining the burrowing activity of the rodents, particularly of the suslik (Citellus undulatus) causing a transformation of the tundra vegetation. One of the problems of the botanical geography of the Arctic is to examine the American-Asiatic connections of flora, and the problems of the ancient Bering land. Since 1956, staff members of the Botanical Institute imeni V.L. Komarov of the USSR AS are studying the flora and vegetation of the Asiatic coast of the Bering Straits. In Summer, 1956, post-graduate student V.A. Gavrilyuk and the author visited the district of the Chaplin and Senyavin hot springs which represent the natural laboratory for studying the biology of the plants of Chukotskiy. In 1958, the author and N.F. Mikhaylova, a worker of the Magadanskiy oblastnoy krayevedcheskiy muzey (Magadan Oblast' Museum of Local Lore), investigated the vegetation at several points of the

Botanical Research on the Chukotskiy Peninsula

eastern coast of Chukotskiy. The materials collected give a possibility to explain the problem of American Asiatic flora connections. The author describes the results of his research work. Problems of transplanting the wild plants to the north are being studied by the Polyarno-al'piyskiy botanicheskiy sad Kol'skogo filiala Akademii nauk SSSR (Polar-Alpine Botanical Garden, Kola Branch of the USSR AS) (Kirovsk, Murmansk Oblast'). Doctor of Biological Sciences N. A. Avrorin, Director of this Garden, and G.N. Andreyev, last summer visited the Chukotskiy Peninsula for the purpose of collecting seeds and living plants to transplant them to the western sector of Soviet Arctic. Over 500 samples of seeds were received by the Polar-Alpine Botanical Garden for acclimatization. They will subsequently be distributed among the districts of the western Arctic. The study and utilization of plants of the Chukotskiy Peninsual for planting of greenery is of great significance. The

Botanical Research of the Chukovskiy Peninsula

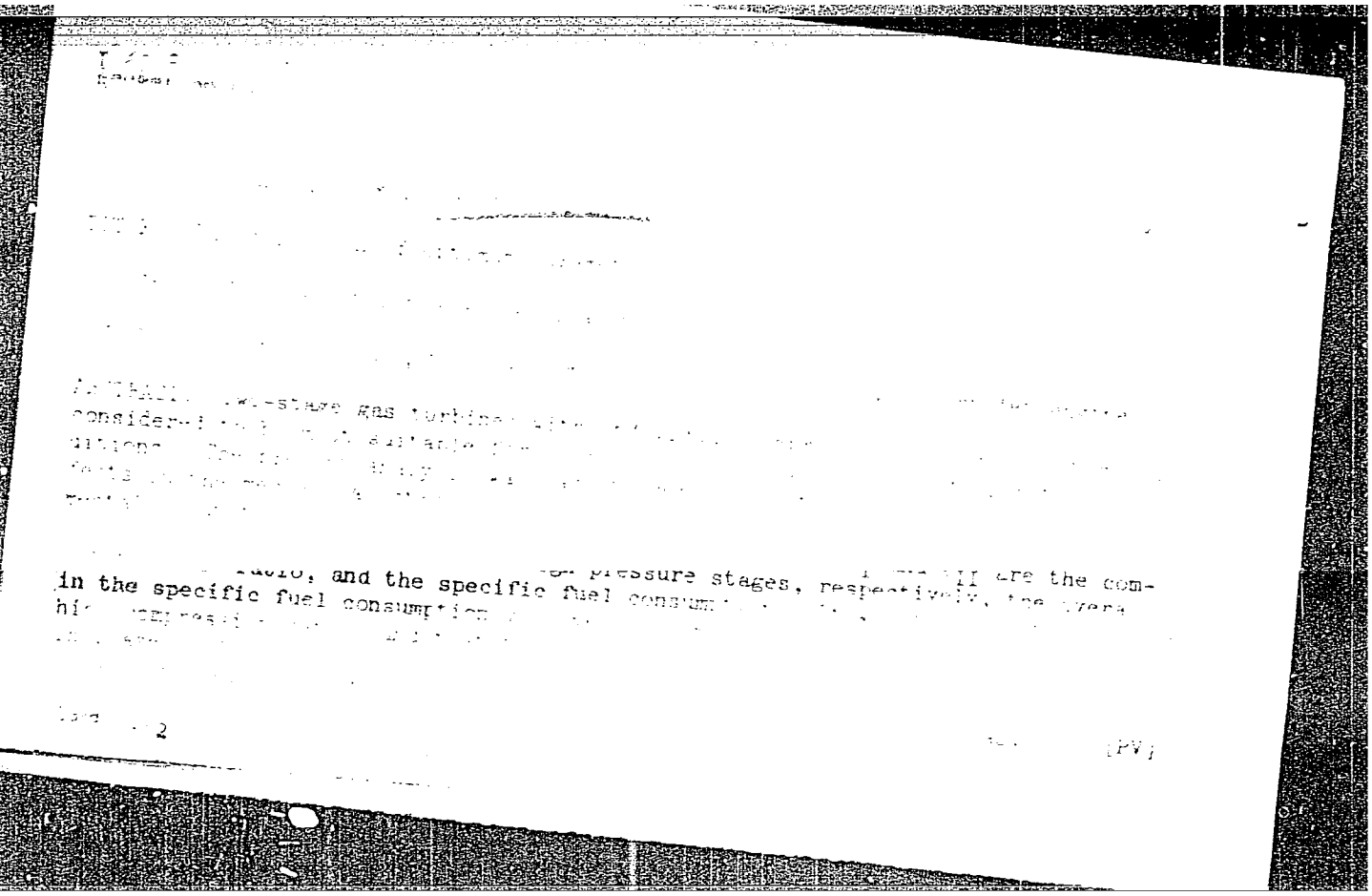
work of T.G. Derviz - Sokolova, devoted to studying the willows of the Arctic, should also be mentioned. Over 10 species of willows are growing in the tundras of Chukotskiy which give a rather great supply of green fodder containing ample starch. There are 6 photographs and 2 Soviet references.

ASSOCIATION: Botanicheskiy institut imeni V.L. Komarova Akademii nauk SSSR (Botanical Institute imeni V.L. Komarov of the AS USSR.

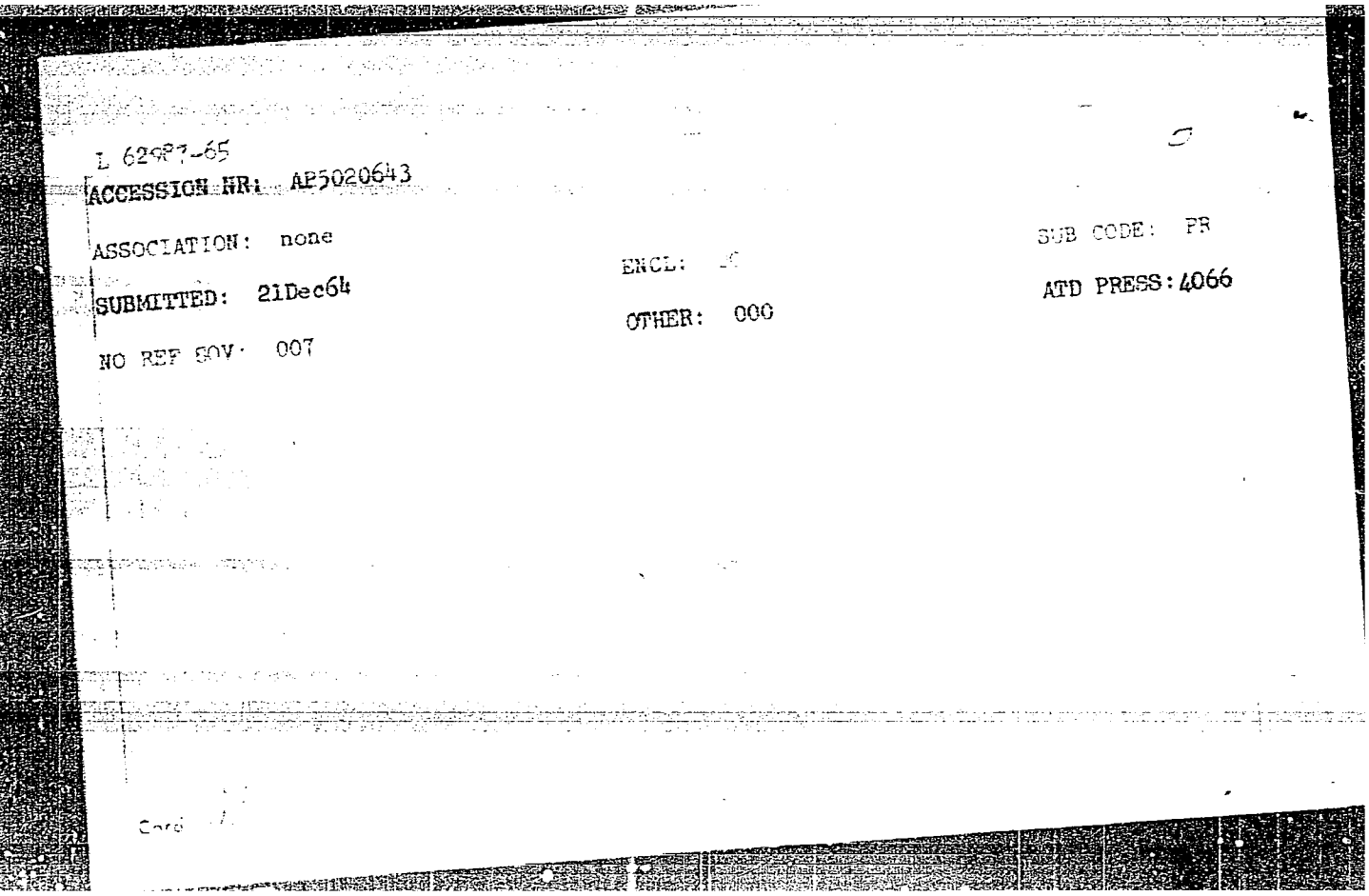
TIKHOMIROV, B.A.

In memory of Feodosii Viktorovich Sambuk. Bot. zhur. 47 no.10:1542-1549 O '62. (MIRA 15:12)

1. Botanicheskiy institut imeni V.L. Komarova AN SSSR, Leningrad.
(Sambuk, Feodosii Viktorovich, 1900-1942)



in the specific fuel consumption



L 62987-65
ACCESSION NR: AP5020643

ASSOCIATION: none

SUBMITTED: 21Dec64

NO REF SOV: 007

ENCL: 00

OTHER: 000

SUB CODE: PR

ATD PRESS: 4066

Card 1/

L 45187-66 EWT(m)/EWP(w)/EWP(f)/T/EWP(t)/ETI JD/WW

ACC NR: AR6028063 SOURCE CODE: UR/0285/66/000/005/0020/0020

65

B

AUTHOR: Topunov, A. M.; Tikhomirov, B. A.; Markozov, N. D.

ORG: none

TITLE: The relationship between the stage and cycle parameters in a single-stage lightweight gas turbine

SOURCE: Ref. zh. Turbostroyeniye, Abs. 5.49.94

REF SOURCE: Tr. Leningr. korablestroit. in-ta, vyp. 47, 1965, 145-154

TOPIC TAGS: gas turbine, gas turbine test, turbine blade, single stage compressor

ABSTRACT: The selection of cycle parameters of a high-pressure turbine in a simple gas-turbine unit is studied. The unit consists of a single-stage turbocompressor, a combustion chamber, and a driving turbine. The principle of a constant safety factor for the fatigue strength of the turbine blades was followed in determining the effect of these parameters on the efficiency of the whole unit. [KP]

SUB CODE: 21/ UDC: 621.438.001.24

Card 1/1 ld

L 01069-67 EWT(m)
ACC NR: AP6022418 (N) SOURCE CODE: UR/0229/66/000/002/0025/0029

AUTHOR: Tikhomirov, B. A.; Topunov, A. M.; Markov, V. L.; Kulesh, Yu. N.

ORG: None

TITLE: Selecting the type of transmission and propeller for hydrofoil vessels

SOURCE: Sudostroyeniye, no. 2, 1966, 25-29

TOPIC TAGS: jet propulsion, hydrofoil, vehicle power transmission system, shipbuilding engineering

ABSTRACT: The authors discuss the problem of power transmission from engine to propeller in hydrofoil craft. The only type of transmission presently used for vessels of this class now in operation or under construction is the mechanical type with straight or bent shaft tube. A transmission with straight shafting is attractive from the standpoint of simplicity although it involves difficulties in locating passenger compartments (the engine must be placed in the bow or midsection), and large losses in torque due to unfavorable conditions of propeller operation. A recent innovation is the transmission with vertical shaft of the "column" type which reduces drag from protruding elements and increases the propulsion factor. The column may be rotated about the vertical axis to solve steering and reversal problems. However, this type of transmission requires spiral gears which are difficult to manufacture for high-power

UDC: 629.125.8-8

Card 1/2

L 01069-67

ACC NR: AP6022418

transmissions. The most compact and strongest transmission of this type uses power doubling through two coaxial shafts rotating in opposite directions. Several modifications of this design are discussed. It is shown that a planetary speed reducer has overall dimensions considerably smaller than those of a cylindrical speed reducer. A planetary reducer also is considerably simpler than a spiral speed reducer to manufacture in spite of design complexities. It is shown that the best screw design is the hydraulic jet type which simplifies reversal problems. Orig. art. has: 4 figures, 4 tables.

SUB CODE: 13/ SUBM DATE: None/ ORIG REF: 003/ OTH REF: 004

Card 2/2 vlr

L 62987-65 EWP(k)/EWT(m)/T-2/EWP(w)/EWP(v) EM UR/0147/65/000/003/0108/0118
ACCESSION NR: AP5020643 629.194.32

AUTHOR: Topunov, A. M.; Tikhomirov, B. A.

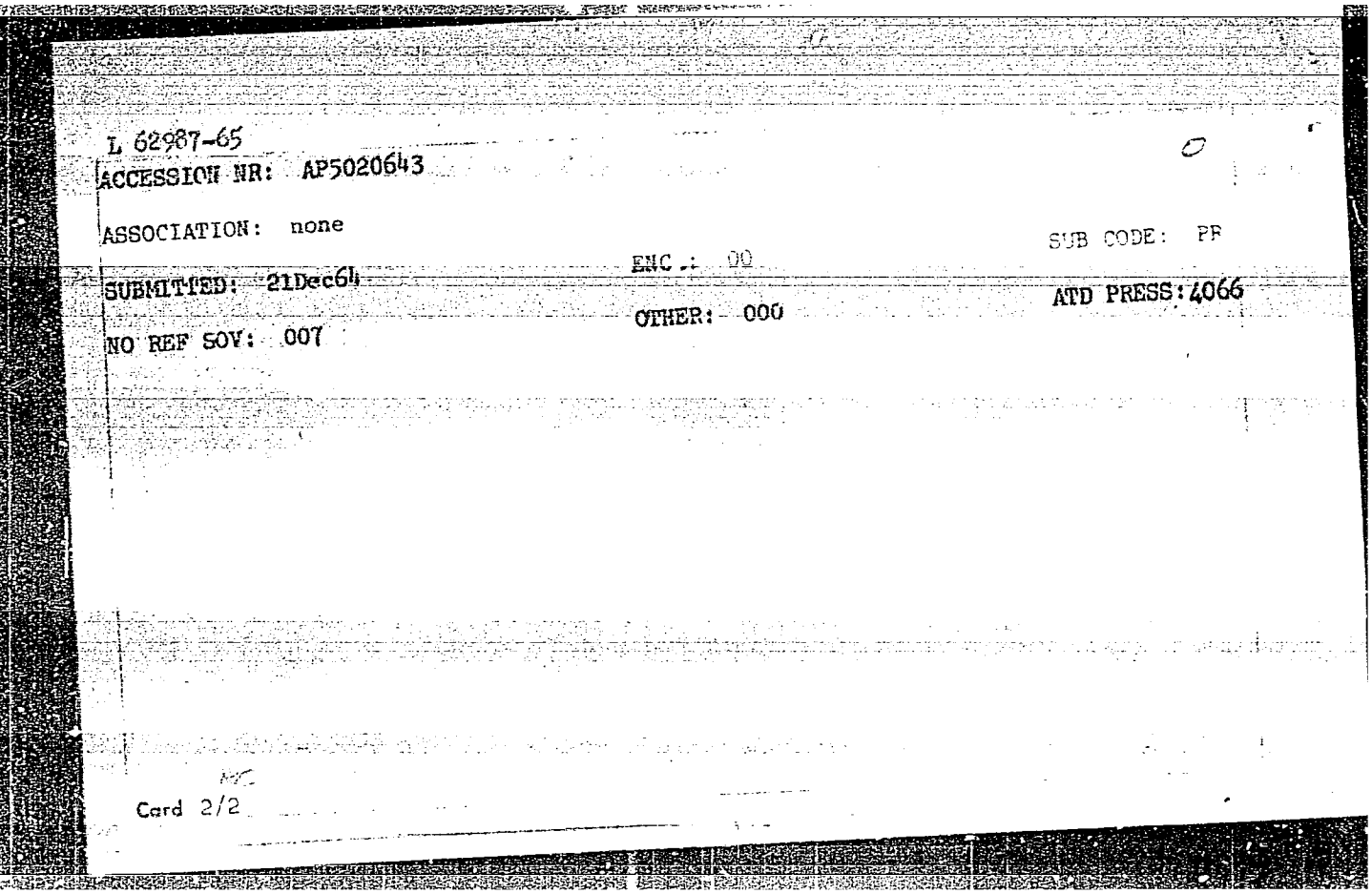
TITLE: The selection of optimum parameters of two-stage gas turbine engines

SOURCE: IVUZ. Aviatsionnaya tekhnika, no. 3, 1965, 108-118

TOPIC TAGS: gas turbine, turbine compressor, turbine design, turbojet engine

ABSTRACT: [illegible] gas turbines with individual compressor and turbine stages are [illegible] effects on the [illegible] parameters as the inlet temperature [illegible] stages, respectively, [illegible] a minimum [illegible] in the specific fuel [illegible] high compression ratios and that the specific [illegible] life entails only a slight [illegible] increase. A considerable increase in [illegible] engines entails a small [illegible] crease in fuel consumption. Orig. art. has [illegible]

Card 1/2



L 62987-65
ACCESSION NR: AP5020643

ASSOCIATION: none

SUB CODE: PR

ENC.: 00

SUBMITTED: 21Dec64

OTHER: 000

ATD PRESS: 4066

NO REF SOV: 007

Card 2/2

L 63013-65 EPA/ENT(1)/EPF(n)-2/EWG(v)/T-2/EEC(m)/EWP(f) Pad-4/Pe-5/Ps-4/
Pw-4 Wa

ACCESSION NR: AP5013270 UR/0114/65/000/005/0029/0032
621.51.001.12

AUTHOR: Topunov, A. M. (Candidate of technical sciences, Docent); Tikhomirov, B. A. (Engineer)

TITLE: Designing two-cascade compressors

SOURCE: Energomashinostroyeniye, no. 5, 1965, 29-32

TOPIC TAGS: compressor, two cascade compressor, gas turbine

ABSTRACT: The design procedure is set forth of a two-cascade axial compressor which consists of two series units, low and high pressure, independently driven by two individual turbines. The design is based on A. W. Morley's work (Aero- [illegible] Quarterly, 1958, vol. 9). The advantages of the two-cascade compressor [illegible] believed that the [illegible] ratios in the low and high cascades, respectively, is undesirable as it results in

Card 1/2

L 6301-65

ACCESSION NR: AP5013270

0

increase of the compressor size. A smaller $\varepsilon_1 / \varepsilon_2$ ratio brings about a more intense regime of the high-pressure unit and reduction in the size of both; however, the hub-tip ratio of the last stage of the high-pressure unit rapidly increases. With small (close to unity) ε_1, ε_2, the high-pressure unit may require more than one stage. Of the three types of gas paths examined in the article, the most adequate seems to be the path with D_{med} = const; it ensures a moderate compressor size and acceptable hub-tip ratio. Orig. art. has: 3 figures and 24 formulas.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: PR

NO REF SOV: 004 OTHER: 002

Card 2/2

TIKHOMIROV, B. A.

"The peculiarities of the structure of arctic plant communities."

report submitted for 10th Intl Botanical Cong, Edinburgh, 3-12 Aug 64.

AS USSR, Leningrad.

TIKHOMIROV, B. A.

"Americano-Asiatic connections in the flora of ancient Beringia."

report submitted for the 7th Intl Cong, Intl Assoc for Quaternary Research, Boulder & Denver, Colorado, 30 Aug-5 Sep 65.

TOLMACHEV, Aleksandr Innokent'yevich; TIKHOMIROV, B.A., prof., doktor biol. nauk, otv. red.; MARKOVSKAYA, L.A., red. izd-va; ZAMARAYEVA, R.A., tekhn. red.

[Arctic flora of the U.S.S.R.; critical survey of vascular plants met in the Arctic regions of the U.S.S.R.] Arkticheskaia flora SSSR; kriticheskii obzor sosudistykh rastenii, vstrechaiushchikhsia v Arkticheskikh raionakh SSSR. Moskva, Izd-vo AN SSSR. No.4.[Families Lemnaceae - Orchidaceae] Semeistva Lemnaceae - Orchidaceae. 1963. 95 p. (MIRA 17:3)

TIKHOMIROV, B.A.

Problems of the utilization of wild edible plants in the Far North of the U.S.S.R. Probl. Sev. no.6: 189-194 '62. (MIRA 16:8)

1. Botanicheskiy institut AN SSSR, laboratoriya rastitel'nosti Kraynego Severa SSSR.
(Russia, Northern—Plants, Edible)

TIKHOMIROV, Boris Anatol'yevich; TOLMACHEV, A.I., otv. red.; BELKINA, M.A., red.izd-va; AREF'YEVA, G.P., tekhn. red.

[Essays of the biology of plants in the Arctic] Ocherki po biologii rastenii Arktiki. Moskva, Izd-vo AN SSSR, 1963. 152 p. (MIRA 16:9)

(Arctic regions--Botany--Ecology)

TIKHOMIROV, B.A.

Some problems and aspects in studying the life forms of plants in the Arctic. Probl. bot. 6:182-197 '62. (MIRA 16:5)
(Arctic regions—Botany)

MINYAYEV, Nikolay Aleksandrovich; TIKHOMIROV, B.A., prof., otv.red.; PETROVICHEVA, O.L., red.izd-va; GILIGANOVA, L.M., tekhn.red.

[Structure of plant associations; based on research material on the blueberry-crowberry series of associations in the Khibiny Mountains] Struktura rastitel'nykh assotsiatsii; po materialam issledovaniia chernichno-voronichnoi serii assotsiatsii v Khibinskom gornom massive. Moskva, Izd-vo Akad.nauk SSSR, 1963. 260 p. (Rastitel'nost' Krainego Severa SSSR i ee osvoenie, no.4) (MIRA 16:2)

(Khibiny Mountains--Plant communities)

TOPUNOV, A.M.; TIKHOMIROV, B.A.

Selecting optimum parameters for a two-cascade gas-turbine engine. Izv. vys. ucheb. zav.; av. tekh. 7 no.3:108-118 '65. (MIRA 18:9)

TIKHOMIROV, B.A., prof.

Urgent problems in studies of the nature of the Soviet Far North.
Vest.AN SSSR 32 no.8:46-50 Ag '62. (MIRA 15:8)
(Russia, Northern—Natural resources)

TIKHOMIROV, B.A.

Basic stages in the development of vegetation in the northern part of the U. S. S. R. in connection with climatic fluctuations and activities of man. Biul. MOIP. Otd. biol. 67 no.1:34-58 Ja-F '62. (MIRA 15:3)

(RUSSIA, NORTHERN--BOTANY--ECOLOGY)

TIKHOMIROV, Boris Anatol'yevich; PIVNIK, Sarra Abramovna; GUSSAKOVSKAYA, O.N., red.; FEDOROVA, V.V., tekhn. red.

[Pinus pumila; biology and utilization] Kedrovyi stlanik; biologiia i ispol'zovanie. Magadan, Magadanskoe knizhnoe izd-vo, 1961. 35 p. (MIRA 15:8)
(Pine)

TIKHOMIROV, Boris Anatol'yevich; TOLMACHEV, A.I., otv. red.; VIKHREV, S.D., red. izd-va; AREF'YEVA, G.P., tekhn. red.

[Treelessness of the tundra, its causes and ways of overcoming it]Bezles'e tundry, ego prichiny i puti preodoleniia. Moskva, Izd-vo Akad. nauk SSSR, 1962. 87 p. (MIRA 15:11)
(Tundras) (Russia, Northern--Afforestation)

TOLMACHEV, Aleksandr Innokent'yevich; TIKHOMIROV, B.A., prof., doktor biolog.nauk, otv.red.; GOLOVNIN, M.I., red.izd-va; KRUGLIKOVA, N.A., tekhn.red.

[Arctic flora of the U.S.S.R.; a critical survey of vascular plants occurring in Arctic regions of the U.S.S.R.] Arkticheskaia flora SSSR; kriticheskii obzor sosudistykh rastenii, vstrechaiushchikhsia v Arkticheskikh raionakh SSSR. Moskva, Izd-vo Akad.nauk SSSR. No.1. [The families Polypodiaceae - Butomaceae] Semeistva Polypodiaceae-Butomaceae. 1960. 101 p. (MIRA 14:2)

(Russia, Northern--Botany)

TIKHOMIROV, B.A.

Ninth International Botanical Congress. Izv. AN SSSR. Ser. biol. no. 4:629-631 Jl-Ag '60. (MIRA 13:8)
(BOTANY--CONGRESSES)

TIKHOMIROV, B.A.; SHAMURIN, V.F.; SHTEPA, V.S.

Temperature of Arctic plants. Izv. AN SSSR. Ser. biol. no.3:429-442 My-Je '60. (MIRA 13:7)

1. Botanical Institute, Academy of Sciences of the U.S.S.R., Leningrad.
(ARCTIC REGIONS--PLANT TEMPERATURE)

TIKHOMIROV, B.A.

On Academician Vladimir Nikolaevich Sukachev's 80th birthday.
Izv. vses. geog. ob-va 92 no.6:539-543 N-D '60. (MIRA 14:1)
(Sukachev, Vladimir Nikolaevich, 1880-)

TIKHOMIROV, B.A., prof.; DOROGOSTAYSKAYA, Ye.V.

Hydrolaccoliths in the permafrost zone. Priroda 50 no.1:102-103 Ja '61. (MIRA 14:1)

1. Botanicheskiy institut AN SSSR, Leningrad.
(Laccoliths) (Siberia--Frozen ground)

[redacted]KOV, B.A.

A trip to the Canadian Arctic. Izv. Vses. geogr. ob-va 93 no.1: 34-45 Ja-F '61. (MIRA 14:2)
(Arctic regions) (Canada--Physical geography)

TIKHOMIROV, B.A.

Papers submitted for the 10th Pacfic Science Congress, Honolulu, Hawaii 21 Aug-6 Sep 1961.

BAZHIN, A., The Leningrad Forestry Engineering Academy imeni S. M. Korov. Invited to give a paper in the Symposium on Forest Inventories (Section V.B.1).

DOBROSEL'SKIY, B. L., Institute of Geography, Academy of Sciences USSR. Invited to give a paper on meteorology in The Matthew Fontaine Maury Memorial Symposium for Antarctic Research (Section VII.D.1).

GERSHENZON, S. M., Institute of Zoology, Academy of Sciences USSR. Invited to give paper in the Symposium on Crop Pests and Biological Control (Section III.D.1).

GILYAROV, Merkuriy S., Institute of Animal Morphology imeni A. N. Severtsov. Invited to give a paper in the Bering Arc Relationships session in the Symposium on Pacific Basin Biogeography (Section III.A.8.a).

GORSHKOV, Georgiy P., Volcanological Laboratory, Academy of Sciences USSR. Invited to participate in discussions of the Symposium on Volcanism and Plutonism in Relation to Types of Crustal Deformation. (Section VII.C.3).

KOBLENTS-MISHKE, Olga I., Institute of Oceanology. Invited to give paper in Symposium on Algae and their Productivity in the Pacific Basin Region (Section III.A,4).

KORT, V. G., Director, Institute of Oceanology. Invited to give paper in The Matthew Fontaine Maury Memorial Symposium for Antarctic Research (Section VII.D.1)

KOSMINSKAYA, Irina P., Institute of Physics of the Earth imeni O. Yu Schmidt. Invited to give paper in Symposium on The Earth's Crust in the Pacific Basin (Section VII.C.2)

KUZNETSOV, A. I., Far Eastern Affiliate imeni V. L. Komarov, Academy of Sciences USSR. Invited to give paper in session on Bering Arc Relationships in Symposium on Pacific Basin Biogeography (Section VI.E.3.a)

MAGNITSKIY, Vladimir A., Institute of Geophysics, Academy of Sciences USSR. Invited to give paper in Contributed Papers Session of Division of Solid Earth Sciences (Section VII.C)

MAKSIMOV, Igor V., Lenin's Place 3, Apt. 18, Leningrad. Invited to participate in Symposium on Tsunamis (Section VII.C)

NAUMOV, Sergey P., Prof., Pedagogical Institute imeni V. I. Lenin, Moscow. Invited to give paper in session on Bering Arc Relationships in Symposium on Pacific Basin Biogeography (Section VI.E.3.a)

NELEPO, B. A., Dr., Faculty of Physics, Moscow State Universtiy. Invited to give paper in Symposium on Radioactive Tracers in Oceanography (Section VII.B)

NESTEROV, Valentin G., Chair of Forestry, The Agricultural Academy imeni K. A. Timiryazev. Invited to give paper in Symposium on Forest Fire Research (Section V.B.3)

RASS, Teodor S., Institute of Oceanology. Invited to present a paper in the Contributed Papers Session of the Division of Marine Biology and Fisheries (Section III.C)

SEMENOVA-TYAN-SHANSKAYA, A., Institute of Botany imeni V. L. Komarov. Invited to give paper in the session of Bering Arc Relationships of Symposium on Pacific Basin Biogeography (Section VI.E.3.a)

SOCHAVA, Viktor, Institute of Botany imeni V. L. Komarov. Invited to give paper in the session of Bering Arc Relationships of Symposium on Pacific Basin Biogeography (Section VI.E.3)

SHVETSOVA, O. I., All-Union Institute of Plant Protection. Invited to give paper in Symposium on Crop Pests and Biological Control (Section I.A.10)

SHUMSKIY, P. A., Institute of Permafrost Studies. Invited to give paper in The Matthew Fontaine Maury Symposium for Antarctic Research (Section VII.D.1)

STEGMAN, Boris, Institute of Zoology. Invited to give paper in the session of Bering Arc Relationships of Symposium on Pacific Basin Biogeography (Section VI.E.3.a)

TIKHOMIROV, Boris A., Institute of Botany imeni V. L. Komarov. Invited to give paper in the session of Bering Arc Relationships of Symposium on Pacific Basin Biogeography (Section VI.E.3.a)

TOLMACHEV, A. I., Institute of Botany imeni V. L. Komarov. Invited to give paper in the session on Bering Arc Relationships of Symposium on Pacific Basin Biogeography (Section VI.E.3.a)

YATSENKO-KHMELEVSKIY, Andrey A., Department of Plant Anatomy and Plant Physiology, The Leningrad Forestry Engineering Academy S.M. Korov. Invited to give paper in Symposium on Wood Anatomy and Taxonomy (Section III.A.7)

TIKHOMIROV, B. G.

1362

Geologicheskoye stroyeniyei paleozoyskaya geologicheskaya istoria sarysytenizskogo podnyatiya M. 1954 195. 20 sm. (Mosk. ordena Lenina 90 s. un-t im. V. Lomonosova). 100 ekz B. ts. (54-52897)

SO: Knizhaya Letopis', Vol. 1, 1955

AUTHORS: Yakubchik, A. I., Spasskova, A. I., Tikhomirov, B. I. 79-28-4-15/60

TITLE: On the Abnormal Products of the Ozonolysis of the Vinyl-1-Cyclohexene-3 (Ob anormal'nykh produktakh ozonoliza vinil-1-tsiklogeksena-3)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 4, pp. 916-920 (USSR)

ABSTRACT: Long ago it was already observed, that in products of ozonolysis such substances may be present, the production of which can not be explained by the traditional schemes of the formation and decomposition of ozonides. These substances were later on designated as abnormal products of ozonolysis. Further investigations and an improvement of the analytical methods showed that the formation of abnormal products during ozonolysis is a quite common phenomenon (References 1,2). Even in the case of substances with a well known structure the problem of the degree of abnormal reaction courses is not

Card 1/ 3

easily solved. In high polymers and in rubber it is even more complicated. Some knowledge on the course of the reaction may be gained from the investigation of the behaviour of a model substance with a known structure showing the structural properties of rubber. Vinyl-1-cyclohexene-3 may serve as a model for divinyl rubber. In the present paper the products of the oxidation decomposition of vinyl-1-cyclohexene-3-ozonide by means of acetylhydrogen peroxide were investigated. The same conditions were applied in this process as are used in the ozonolysis of divinyl rubbers in the laboratory. The influence of the α-methylene group and of the tertiary carbon atom bound to the vinyl group on the formation of abnormal ozonolysis products was also examined. The separation of the acids forming in the decomposition of the ozonide was performed with the help of distributive chromatography. Summary: 1) Apart from normal products -1,2,4-butanetricarbonic - and formic acids - also abnormal products - succinic acid, 1,2,3-propanetricarbonic-

On the Abnormal Products of the Ozonolysis of the Vinyl-1-Cyclohexene-3 79-28-4-15/60

and propionic acids were found in the ozonolysis products of vinyl-1-cyclohexene-3. 2) β-ethylglutaric acid , an abnormal product, was discovered in the ozonolysis products of ethyl-1-cyclohexene-3. 3) The abnormal reactions are caused as well by the presence of the α-methyl group as by the labile bond between the tertiary carbon atom and the carbon atom in the double binding. 4) A somewhat lower yield of 1,2,4 butanetricarbonic acid and a somewhat higher yield of succinic acid as well as of 1,2,3 propanetricarbonic acids may be expected in the products of ozonolysis of divinyl rubbers, the macromolecules of which have a structure range of -1,4 -1,2 -1,4 - . There are 2 figures, 1 table and 21 references, 6 of which are Soviet.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)

SUBMITTED: April 12, 1957

Card 3/3

YAKUBCHIK, A.I., TIKHOMIROV, B.I.

Investigation of the products of the ozonolysis of 1-vinyl-3-cyclohexene and 1-ethyl-3-cyclohexene. Trudy LTI no.58:45-50 '59. (MIRA 13:7)

1. Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova.
(Cyclohexene) (Ozone)

5.3830

77365
SOV/79-30-1-26/78

AUTHORS: Yakubchik, A. I., Tikhomirov, B. I.

TITLE: Concerning the Conditions of 1,4-Polybutadiene Hydrogenation at Atmospheric Pressure

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 1, pp 128-132 (USSR)

ABSTRACT: Hydrogenation of 1,4-polybutadiene was carried out in decalin at 140° over the following catalysts: palladium black, palladium on calcium carbonate, skeletal nickel, and platinum black. Table A shows the conditions of 1,4-polybutadiene hydrogenation.

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Concerning the Conditions of 1,4-Polybutadiene Hydrogenation at Atmospheric Pressure

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It is necessary to remove alcohol from the skeletal nickel and to wash it with pentane before it can be used in the reaction. The unsaturation of the obtained products was determined with iodine bromide for reaction products soluble at room temperature (experiments 1 and 2), and with bromine (by bromination) for reaction products insoluble at room temperature. It is important to carry out the bromination without light to avoid substitution. The authors thank V. A. Krol' for supplying 1,4-polybutadiene samples. There are 2 figures; 1 table; and 23 references, 7 Soviet, 9 U.S., 1 U.K., 6 German. The 5 most recent U.S. references are: Blanchett, J. H., Cotman, J. D., J. Org. Ch., 23, 1117 (1958); Peters, H., Lockwood, W., Rubber World, 138, Nr 3, 418 (1958); Chem. Eng. News, 36, Nr 29, 56 (1958); Amer. Patent 2813809 (1957); Amer. Patent 2731439 (1956).

ASSOCIATION: Leningrad State University (Leningradskiy gosudarstvennyy universitet)

SUBMITTED: January 19, 1959

Card 3/3

89995

S/190/61/003/003/012/014
B101/B204

15.9201

AUTHORS: Tikhomirov, B. I., Yakubchik, A. I., Klopotova, I. A.

TITLE: The crystallinity of the hydrogenation products of cis-1,4-polybutadiene

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 3, 1961, 486

TEXT: In the present "Letter to the Editor" it is said that cis-1,4-polybutadiene, which contained 6% 1,2 links, 1, 2 or 5% trans-1,4 links, was hydrogenated at different intensities. The X-ray structural analysis of the hydrogenation products showed that they are of crystalline structure with a degree of non-saturation of 70% and less, i.e., with commensurable quantities of disordered hydrogenated and non-hydrogenated links. It is assumed that also polymers with a lower number of hydrogenated links are capable of being crystallized, but their melting point is probably below 0°C. It was further observed that the hydrogenation products yielded spherolites. With a growing degree of hydrogenation, the spherolites became visible with increasing distinctness. The following explanation is given: By hydrogenation, the chains become less flexible.

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89995

The crystallinity of the S/190/61/003/003/012/014
B101/B204

The interaction between the chains becomes more intensive, and an ordering of the macromolecules in the threedimensional lattice occurs. The conclusion is drawn that linear ethylene and butadiene copolymers, should it be possible to synthetize them by polymerization, will exhibit rubber properties only if they contain a sufficient number of cis-1,4-butadiene links. There are 2 references: 1 Soviet-bloc and 1 non-Soviet-bloc.

SUBMITTED: November 17, 1960

Card 2/2

30867
S/054/61/000/004/008/009
B102/B138

// 2211

AUTHORS: Yakubchik, A. I., Tikhomirov, B. I., and Sulimov, V. S.

TITLE: Hydrogenation of natural and synthetic cis-1,4-polyisoprene

PERIODICAL: Leningrad. Universitet. Vestnik. Seriya fiziki i khimii, no. 4, 1961, 135 - 138

TEXT: The authors studied the influence of experimental conditions on the hydrogenation depth of natural cis-1,4-polyisoprene separated from latex, and synthetic non-branched cis-1,4-polyisoprene. Their molecular weight was 900,000 and 230,000, respectively. The polyisoprenes were both purified by precipitation from a benzene solution. Then they were dissolved in decaline and hydrogenated by electrolytic hydrogen (80 - 100 atm) with nickel-nickelguhr catalyst. For natural rubber (98% cis-1,4-isoprene) temperature, duration of hydrogenation, and rubber-to-catalyst ratio (C) were varied, for synthetic cis-1,4-isoprene, temperature, C, and concentration of solution were varied and the depth of hydrogenation was determined in each case. It was dependent on the viscosity of the solution, i. e., on the molecular weight of the polyisoprene. Hydrogenation

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was easier with a rubber of low molecular weight. Depth was increased by raising temperature, or increasing the amount of catalyst or length of reaction period. No trans-1,4-polyisoprene could be detected by infrared absorption tests. This means no cis-trans isomerization took place. An ИРФ-22 (IRF-22) refractometer was used to determine the refractive indices. The refractive index of the polymer was found to decrease with depth of hydrogenation. This means that cyclization does not occur. The refractive index of the hydrogenated rubbers depends linearly on the degree of non-saturation. The vitrification temperature rises with increasing depth of hydrogenation. The authors thank V. N. Reykh for the synthetic cis-1,4-polyisoprene. There are 4 tables and 7 references: 5 Soviet and 2 non-Soviet. The reference to the English-language publication reads as follows: G. Verghese. Rubb. Chem. and Technol. 22, 731, 1949.

YAKUBCHIK, A.I.; TIKHOMIROV, B.I.; SULIMOV, V.S.

Hydrogenation of natural and synthetic cis-1,4-polyisoprene. Vest LGU 16 no.22:135-138 '61. (MIRA 14:11)
(Isoprene) (Hydrogenation)

27072
S/080/61/034/003/014/017
A057/A129

15.9201
11.2211

AUTHORS: Yakubchik, A. I., Nikonorov, B. I., Mikhaylova, L. N.

TITLE: Hydrogenation of sodium-polybutadiene

PERIODICAL: Zhurnal prikladnoy khimii, v. 34, no. 3, 1961, 652 - 6[illegible]

TEXT: The effect of varying conditions on the degree of hydrogenation of sodium-polybutadiene was investigated. Also some properties of hydrogenates with a different degree of saturation were determined. The greatest influence on the degree of hydrogenation was shown by the ratio polybutadiene/catalyst in hydrogenation of sodium-polybutadiene in solution with a nickel-kieselguhr catalyst. In the temperature range of 60 - 140°C no cyclization occurs. The ethylenic double bonds in sodium-polybutadiene are hydrogenated in preference to the internal double bonds. The present work was carried out in continuation of former investigations on hydrogenation of cis-1,4-polybutadiene [Ref. 1: ZhOKh, 30, 125 (1960)]. Comparing the structure of cis-1,4-polybutadiene to the structure of sodium-polybutadiene the present authors expected that hydrogenation of the latter will proceed more easily and an amorphous product will be obtained. Both assumptions were proved by the present experiments. Industrial-grade sodium-polybutadiene (SKB/SKB)

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type] with a mean molecular weight of 230,000 was used and purified by a method previously described (Ref. 1). The saturation degree of 87.7% was determined with an iodine-bromide solution according to A. A. Vasil'yev [Ref. 2: Zh.OKh., 17, 923 (1947)]. Isooctane was used as solvent and hydrogenation was carried out with a nickel-kieselguhr catalyst and electrolytic hydrogen (70 - 100 atm) in an autoclave (2 l) agitated electromagnetically (2,700 rpm) with an agitator [designed by N. Ye. Vishnevskiy. The catalyst was prepared by reducing nickel oxide on kieselguhr in an electrolytic hydrogen stream at 300°C for 3 hrs. Before preparation, the catalyst was stored in the used solvent (isooctane). The hydrated polymer was precipitated by acetone and then centrifuged at 2,500 - 2,700 rpm, washed, dried, and the saturation degree was determined with iodine bromide. The effect of conditions on the saturation degree was determined and results are presented in Table 1. Differently from emulsified polybutadiene, which was investigated by E. V. Jones et al. [Ref. 3: Ind. Eng. Chem., 45, 1117 (1953)], no considerable effect of temperature could be observed, but an effect of the ratio hydrogen/catalyst. The preference in hydrogenation of external double-bonds observed already in polybutadiene in a prior work [Ref. 4: Zh.OKh., 26, 1381 (1956)], and also in emulsified polybutadiene (Ref. 3) is according to infrared-spectrum data (Table 2)

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much greater in hydrogenation of sodium-polybutadiene. Vitrification temperature measured according to A. I. Marey [Ref. 5: Tr. VNIISK (Proceedings of the All-Union Scientific Research Institute of Synthetic Rubber imeni Academician S. V. Lebedev), 3, 173 (1951)] decreases with increasing hydrogenation degree (Table 3). This is apparently due to the fact that first vinyl groups are hydrated resulting in a weakening of molecular interaction and increasing elasticity of the molecules. The amorphous state of sodium-polybutadiene is stable due to the irregular structure and branched macromolecule. Thus hydropolybutadiene is a valuable frostproof polymer. Determinations of the change in refractive index (Table 4) with saturation degree indicate that no cyclization occurs during hydrogenation, since an increasing saturation degree effects a decrease in refraction index, i. e., an opposite effect than observed in cyclization by J. R. Shelton and L. H. Lee [Ref. 6: Rubber Chem. and Technol., 31, 2, 415 (1958)]. There are 4 tables and 6 references: 4 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: R. V. Jones et al. Ind. Eng. Chem., 45, 1117 (1953); J. R. Shelton, L. H. Lee, Rubber Chem. and Technol., 31, 2, 415 (1958).

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)

SUBMITTED: September 13, 1960

Card 3/3

30200
S/080/61/034/011/013/020
D228/D301

15.9300

AUTHORS: Yakubchik, A.I., Reykh, V.N., Tikhomirov, B.I., and Pavlikova, A.V.

TITLE: Influence of hydrogenation on the properties of polybutadienes

PERIODICAL: Zhurnal prikladnoy khimii, v. 34, no. 11, 1961, 2501 - 2507

TEXT: The authors studied the influence of hydrogenation on some physico-mechanical properties of sodium-polybutadiene (I) and cis-1,4-polybutadiene (II): modulus of stretching, tensile strength, specific elongation, hardness, recoil elasticity, grindability, temperature of brittleness, frost-resistance coefficient, and gas permeability. Previous work by A.I. Yakubchik et al. has shown that the hydrogenation of such compounds gives both products with commensurate amounts of hydrogenated and unhydrogenated rings and polymers with predominantly hydrogenated rings; the properties of the obtained hydropolybutadienes depend on the original polymer's

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structure. A.I. Yakubchik's method (Ref. 4: Zh. prikl. khimii, 34, 652, 1961) was followed in the hydrogenation of I and in preparing vulcanized rubbers with different microstructures and degrees of unsaturation. The procedure developed by the same author (Ref. 5: Zh. prikl. khimii, 34, 942, 1961) was used to obtain similar specimens - which possessed marked crystallinity - from the hydrogenation products of II. It is concluded from the experimental data that the tensile strength and specific elongation of the vulcanized rubbers obtained from the hydrogenation of I are at a minimum when the degree of unsaturation is decreased by approximately two-fold. The decrease of this latter also results in their increased hardness and resistance to heat-ageing and in their diminished brittleness-temperature, gas-permeability, and elasticity; this reduction of the chain elasticity is believed to be caused by the lessened number of double bonds in the chains and by the conversion of side-chain vinyl groups into ethyl groups. The degree of regulation in the polymer chains appears to influence favorably the rubbers' specific-elongation and tensile-strength, even in those cases when it does not lead to crystallization. The increased

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frost-resistance of the rubbers is considered to be due to the decrease of the inter-chain reaction in polymers with a small degree of unsaturation - and hence to be related to the "internal plastification" effect. For the hydrogenation products of II the elasticity of vulcanized rubbers likewise decreases as the degree of unsaturation diminishes, but their hardness becomes greater. The rise in the temperature of vitrification, which was determined by Mareyev's method [Abstractor's note: No reference given], is connected with the increased rigidity of the polymer chains. There are 3 figures, 4 tables and 10 references: 8 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: J.D. D'Ianni, Ind. Eng. Chem. 40, 253, 1948; L. Kraus, Rubb. and Plast. Age 38, 880, 1957.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet i Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka im. S.V. Lebedeva (Leningrad State University and the All-Union Synthetic Rubber Research Institute im. S.V. Lebedev)

SUBMITTED: June 22, 1961

Card 3/3

30204
S/080/61/034/011/019/020
D204/D301

15.1123

AUTHORS: Yakubchik, A.I., Grilikhes, S.Ya., Tikhomirov, B.I., and Purlova, V.S.

TITLE: The bonding of polyethylene to metals and to rubber

PERIODICAL: Zhurnal prikladnoy khimii, v. 34, no. 11, 1961, 2579 - 2581

TEXT: A series of adhesives has been developed which alloy good bonding to be achieved between polyethylene and brass of brass-plated metals and with rubber, without the need for pretreating the surfaces. A short review of the Western work in this field is given and it is considered that partially hydrogenated, linear 1,4 polybutadiene would form the basis of a satisfactory adhesive, owing to structural similarities with polyethylene. Adhesive compositions were as follows: Partially hydrogenated 1,4 polybutadiene 100, ZnO 40-50, petroleum ether 3-5, sulphur 2-5, trimethyl dihydroquinoline 1, stearic acid 0.5 and mercaptobenzazole 0.5 - 1 parts by weight. The adhesive was dissolved in 10-15 ml toluene per g. of mixture. The solution was applied to the surfaces to be

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bonded whilst still hot, dried to produce films and the surfaces were then pressed together at 100 kg/cm^2, for 10-20 minuts, at 130-200°C. The degree of unsaturation of the polybutadiene was varied between 7 and 25 % and brass containing 65-75 % Cu was used. The bonding strengths, (50 - 100 kg/cm^2), were higher when 1,4 polybutadiene with lower degrees of unsaturation were used. Further improvements in the strength of adhesion are anticipated, as the high values reported in the present paper are said to be easy to obtain under far from ideal conditions. Research into brass-plating is now in progress to extend the above method to metals other than brass. Very good bonding to rubber was obtained, whose strength could not, however, be measured, since the rubber parted in preference to the joint. The bonding mechanism is briefly discussed. There are 1 table and 5 references: 3 Soviet-bloc and 2 non-Soviet-bloc. The references to English-language publications read as follows: I.D. Morron, India Rubber World, 98, 4, 35, 1938; H. I. Peters and W.H. Lockwood, Rubber World, 138, 3, 418, 1958

ASSOCIATION. Leningradskiy gosudarstvennyy universitet (Leningrad State University)

SUBMITTED: June 6, 1961

Card 2/2

32344
S/190/62/004/001/005/020
B101/B110

15.9201

AUTHORS: Tikhomirov, B. I., Yakubchik, A. I., Klopotova, I. A.

TITLE: Crystallinity of hydrogenation products of cis-1,4-polybutadiene

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 1, 1962, 25-29

TEXT: To study the dependence of the crystallinity on the hydrogenation degree of cis-1,4-polybutadiene (PB), the polymer was synthesized on a Ziegler catalyst. It contained 6% of 1,2- and 5% of trans-1,4 links. Propane-1,2,3-tricarboxylic acid was not contained in ozonolysis products. Nonoriented films 0.2 mm thick were obtained by fast evaporation of a 1% toluene solution of differently hydrogenated PB and the X-ray photograph of scattered radiation was recorded by a УРС-50И (URS-50I) apparatus with a Geiger counter. All samples with 6.5, 10.0, 28.5, 48.0, 54.1, and 70.5% nonsaturation showed scattering curves similar to those of polyethylene. The peaks occurring at the angles $2\theta = 21.4 \pm 0.2^{\circ}$ and $2\theta = 23.6 \pm 0.2^{\circ}$ were the same as those for polyethylene. Maxima which would correspond to the interplanar spacing of 1,4-cis-PB were not observed. Hence follows a

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